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Amendment to the Claims:

1. (Currently Amended) A piston compressor comprising:
a cylinder housing which forms a cylinder wall that defines a cylinder;
a piston which oscillates in the cylinder and, in a filling position, compresses gas in a cylinder pressure space, the piston defining a piston wall which faces the cylinder wall;
gas bearing nozzles arranged adjacent the piston for gas-supporting the piston, at least one of the gas bearing nozzles being arranged in the cylinder housing;
a compressed-gas accumulator connected with the gas bearing nozzles;
a compressed-gas supply line between the cylinder pressure space and the compressed-gas accumulator; and
an inlet valve in the compressed-gas supply line, the inlet valve being open in the filling position of the piston the inlet valve being defined by a cylinder wall opening and a piston wall opening which, in the filling position of the piston, are located opposite each other and define an open valve, and, in a non-filling position, are closed by the piston wall and the cylinder wall, respectively, and define a closed valve.
2. (Previously Presented) The piston compressor according to claim 1, wherein at least one of the cylinder wall opening and the piston wall opening are configured as a circular groove.
3. (Previously Presented) The piston compressor according to claim 1, wherein the compressed-gas supply line is arranged in the cylinder housing between the cylinder pressure space and the inlet valve.
4. (Previously Presented) The piston compressor according to claim 1, wherein the compressed-gas supply line is arranged in the piston between a piston end and the piston wall.

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5. (Currently Amended) The piston compressor according to claim ~~[[1]]~~ 8, wherein the compressed-gas accumulator and the gas bearing nozzles are arranged in the piston.

6. (Previously Presented) The piston compressor according to claim 4, wherein in the compressed-gas supply line a second inlet valve defined by a second cylinder wall opening and a second piston wall opening is arranged.

7. (Previously Presented) The piston compressor according to claim 1, wherein in the cylinder, an anti-twist device is provided which prevents the piston from twisting in the cylinder.

8. (Currently Amended) ~~The A~~ piston compressor ~~according to claim 1, wherein comprising:~~

a cylinder housing which forms a cylinder wall that defines a cylinder;

a piston which oscillates in the cylinder and, in a filling position, compresses gas in a cylinder pressure space, the piston defining a piston wall which faces the cylinder wall;

gas bearing nozzles arranged adjacent the piston for gas-supporting the piston, each gas bearing nozzle is being formed by one of:

a wire inserted in a nozzle bore, and

a gas permeable plug of sintered material.

9. (Previously Presented) The piston compressor according to claim 1, wherein each gas bearing nozzle is formed by a gas-permeable plug of sintered material.

10. (Currently Amended) The piston compressor according to claim 1, wherein at least one of the gas bearing nozzles ~~are~~ is arranged in a respective transversal plane adjacent end portions of the piston.

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11. (Currently Amended) The piston compressor according to claim 1, wherein at least one of the gas bearing nozzles are is provided in the piston.

12. (Currently Amended) The piston compressor according to claim ~~[[1]]~~ 8, wherein the gas bearing nozzles are arranged in the cylinder housing.

13. (Currently Amended) ~~The~~ A piston compressor ~~according to claim 1, further including comprising:~~

a cylinder housing which forms a cylinder wall that defines a cylinder;

a piston which oscillates in the cylinder and, in a filling position, compresses gas in a cylinder pressure space, the piston defining a piston wall which faces the cylinder wall;

gas bearing nozzles arranged adjacent the piston for gas-supporting the piston;

a compressed-gas accumulator connected with the gas bearing nozzles;

a compressed-gas supply line between the cylinder pressure space and the compressed-gas accumulator;

an inlet valve in the compressed-gas supply line, the inlet valve being open in the filling position of the piston the inlet valve being defined by a cylinder wall opening and a piston wall opening which, in the filling position of the piston, are located opposite each other and define an open valve, and, in a non-filling position, are closed by the piston wall and the cylinder wall, respectively, and define a closed valve; and

a pneumatic piston end-position control device which comprises:

a control pressure accumulator in the piston, wherein the control pressure accumulator is connected with a control pressure accumulator piston wall opening in the piston wall,

a constant-pressure gas source connected via a line with a cylinder wall opening which defines together with the control pressure accumulator piston wall opening a control valve and, in the filling position of the piston, is located

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opposite the control pressure accumulator piston wall opening, and

a line between the cylinder pressure space and a cylinder wall opening which together with the control pressure accumulator piston wall opening defines a discharge valve and, during a cycle in a non-filling position of the piston, is located opposite the control pressure accumulator opening.

14. (Previously Presented) A stirling cooler comprising:
a cold finger, and

a piston compressor according to claim 1, wherein:

the cold finger comprises a displacer piston in a cold finger cylinder housing,

the cold finger comprises a compressed-gas accumulator and gas bearing nozzles connected therewith for supporting the displacer piston,

the cold finger compressed-gas accumulator is connected via a cold finger gas supply line with the piston compressor compressed-gas accumulator, and

in the cold finger gas supply line, a valve is arranged which is defined by a piston wall opening and a wall opening of the piston compressor and is opened when the piston compressor piston is in the filling position.

15. (Previously Presented) The piston compressor according to claim 1, further including:

an associated supply line connected with the compressed gas accumulator and adapted for connection with an associated device.

16. (Currently Amended) ~~The A~~ piston compressor ~~according to claim 15, further~~ including:

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a cylinder housing which forms a cylinder wall that defines a cylinder;
a piston which oscillates in the cylinder and, in a filling position,
compresses gas in a cylinder pressure space, the piston defining a piston wall which
faces the cylinder wall;

gas bearing nozzles arranged adjacent the piston for gas-supporting the
piston;

a compressed-gas accumulator connected with the gas bearing nozzles;

a compressed-gas supply line between the cylinder pressure space and the
compressed-gas accumulator;

an inlet valve in the compressed-gas supply line, the inlet valve being
open in the filling position of the piston the inlet valve being defined by a cylinder
wall opening and a piston wall opening which, in the filling position of the piston, are
located opposite each other and define an open valve state, and, in a non-filling
position, are closed by the piston wall and the cylinder wall, respectively, and define a
closed valve state

an associated device supply line connected with the compressed gas accumulator;

an associated device accumulator connected with the associated device
supply line, and

an associated device air ~~bearings~~ bearing connected with the associated
device accumulator.

17. (Previously Presented) The piston compressor according to claim
16, further including:

an associated device piston supported by the associated device air
bearings.

18. (Previously Presented) The piston compressor according to claim
17 wherein the associated device is a cold finger.